UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,116	01/27/2004	Daniel C. Guterman	SAND-01016US0	3156

28554	7590	09/08/2005	EXAMINER
			NGUYEN, VIET Q

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ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*Election filed on 8/11/2005*</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>27-45</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>38-45</u> is/are allowed.

6)☒ Claim(s) <u>27,28,33,35 and 36</u> is/are rejected.

7)☒ Claim(s) <u>29-32,34 and 37</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/17, 6/17, 6/27, 08/05</u>

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims **27-45** are present for examination.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claim **27-28, 33, 35-36** are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Holzmann et al (US 6,301,161).**

Regarding claim **27**, **Holzman et al (see Fig. 1)** shows a circuit for programming

a non-volatile memory cell (flash cell 120) which has a capability of providing "coarse

amplitudes (voltage)" for coarse programming phase and also "fine amplitudes

(voltage)" for fine programming phase. Fig. 3 shows a similar claimed programming

method that utilize both coarse and fine programming phases, and such that a fine

programming phase (begins at step 340) follows after the coarse programming phase

(begins at step 310). It is noted that although this reference does not specifically

mention the word "metering charge"; however, Fig. 2 of this reference already shows

the appropriate circuitry for providing appropriate programming voltage pulses and/or

current pulses to the control gate of the memory cell (210), and their amplitudes can be

adjusted or varied base don programming time and/or verification process. Thus, as

time progrsess4es, the charge that could be stored and/or accumulated onto the floating

(per each fine programming step) can be finely controlled, measured, injected, or

"metered" carefully as well. For example, col. 4 (lines 55-61) stated that "...the absolute

value change of the floating gate voltage depends on the programming time, the

programming current Ip (242) and the applied voltage Vpdp (222) and Vsgp

(232)".Thus, in so far as programming verification is concerned, the stored charges on

the floating gate can be stored, read out, compared, decided, and metered gradually as

"increasing" or "decreasing", if any, as desired without any complicated circuitry required

to one skilled in this art. As a result, charges can be "metered" in or out obviously using

just these voltage and/or current switches based on programming time without further

complicated circuitry for example .

Regarding claim **28**, Fig. 3 shows that fine programming is carried out right after

coarse programming phase;

Regarding claim **33 & 35**, Fig. 2 shows that a plurality of voltage switches for

switching power supplies to the floating gate of such non-volatile cell. Furthermore, the

coarse programming phase/mode does not use any metering charge techniques.

4.   Claim **27-28, 33, 35-36** are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Mokhlesi et al (6,856,551).**

Regarding claim **27, Mokhlesi et al (see Fig. 5)** shows a similar claimed

programming method that utilize both coarse and fine programming phases, and such

that a fine programming phase (begins at step 529) follows after the coarse

programming phase (begins at step 503). It is noted that although this reference does

not specifically mention the word "metering charge"; however, Fig. 4A-4B of this

reference already shows the appropriate circuitry for providing appropriate programming

voltage pulses and/or programming current pulses to the control gate of the memory cell

(411, 413, 415) using switches (421), and their amplitudes can be adjusted or varied

based on programming time and/or programming verification process. Thus, as time

progrsess4es, the charges that could be stored and/or accumulated onto the floating

(per each fine programming step) can be finely controlled, measured, injected, or

"metered" carefully as well, see cols. 11-14. Thus, in so far as programming verification

is concerned, the stored charges on the floating gate can be stored, read out,

compared, decided, and metered in/out the cell gradually as "increasing" or

"decreasing" using programming switches (421), if any, as desired without any

complicated circuitry required to one skilled in this art. As a result, charges can be

"metered" in or out as recited obviously using just these voltage and/or current switches

based on programming time without further complicated circuitry for example.

Regarding claim **28**, Fig. 5 shows that fine programming is carried out right after

coarse programming phase;

Regarding claim **33 & 35**, Fig. 4 shows that a plurality programming switches

(421) for switching power supplies to the floating gate of such non-volatile cell.

Furthermore, the coarse programming phase/mode does not use any metering charge

techniques.

Regarding claim **36**, Flash or multi-state flash cell has been well discussed in the background of this invention.

5.   Other claims are allowable over the prior arts of record for the reason as stated below:

- Claims **29-32** recite the specific conditions and/or sub-steps for the claimed "metering" step which is not suggested or fairly seen elsewhere;

- Claim **34** recites the use of a "variable" power supply;

- Claims **37-45** recite the use or specific steps of fine programming process, etc.

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viet Q. Nguyen whose telephone number is (571) 272-1788. The examiner can normally be reached on 7am-6pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

V. Nguyen
09/03/2005

VIET Q. NGUYEN
PRIMARY EXAMINER